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REVIEWS

The Upper Silurian fauna of the Rio Trombetas, State of Pará, Brazil.

By JOHN M. CLARKE. *Archivos do Museu Nacional do Rio de Janeiro*, 1897-1899, Vol. X, 1-48. Rio de Janeiro, 1899.

Devonian mollusca of the State of Pará, Brazil. By JOHN M. CLARKE, *idem* 49-174.

These two papers are published in both English and Portuguese and are accompanied by eight beautifully drawn quarto plates, done by lithographers accustomed to work of this kind, illustrating all the species described.

The collections described are those made in 1876, in the Amazon valley, by the extinct "Comissão Geologica" or Imperial Geological Survey of Brazil. When the survey was suspended in 1877 the collections were turned over to the National Museum at Rio de Janeiro, and through the efforts of Professor O. A. Derby, previously a member of the survey and later director of the geological section of the National Museum, these unique collections were placed in the hands of Dr. John M. Clarke, one of our best American paleontologists. Dr. Clarke had already described and figured the trilobites of the Ereré and Maecurú sandstone, his paper appearing in Vol. IX of these same archives. The papers here mentioned make his second important contribution to our knowledge of the paleontology of the Amazon valley, and the most valuable since the publication of Dr. C. A. White's great work upon the Cretaceous fossils of Brazil.

At the end of the second paper he gives a list of the Devonian species of the Lower Amazon region, and finds the Ereré fauna to be "a miniature of the Hamilton" of New York (p. 158). The Curuá fauna he considers a member or modification of the Maecurú group. The rocks from which these fossils come are exceedingly rich, one locality, Ereré, furnishing forty-eight species, and, another, Maecurú, seventy-eight species.

In his summary concerning the Silurian fossils Dr. Clarke says that "the lower and upper Silurian elements of this little fauna are pretty equally commingled, and the inference is quite natural that in this

region the break in the record represented by the conventional plane of separation between the upper and lower divisions of the series is here obliterated. . . . The little fauna is the oldest yet described from Brazil."

That last remark reminds me that some three years ago I published in this journal (Vol. IV, p. 975) a notice of an article by Dr. F. Katzer upon "The oldest fossiliferous beds of the Amazon region." In that article Dr. Katzer claims to have found graptolites in rocks said to have come from the Rio Maecurú region. Since the appearance of that note my attention has been directed to the fact that the article in question contained neither names, descriptions, nor figures of such graptolites, and that the origin of the fossils he mentioned was not really known—omissions that I should have observed without assistance.

It is a matter of painful interest to observe the great gaps of time between the collecting of the fossils by the Geological Commission, the date of Dr. Clarke's papers, and the date on the title page of this belated volume of excellent work.

We are accustomed in this country to hear more or less complaint about delay in the publication of government reports. But in this instance we may see if we will how much worse such matters might be. These collections were made in 1876, were placed in Dr. Clarke's hands in 18(?), the paper on the Silurian fossils was finished by him in 1891, that upon the Devonian in 1892, and the publication appears toward the end of 1899—twenty-three years after the field-work!

The inconvenience of this sort of thing is perhaps not as serious in Brazil where comparatively little is doing in science as it might be here or in Europe, but, like all other wrongs, sooner or later the country must pay for them.

J. C. BRANNER.

The Cretaceous of the Black Hills as Indicated by the Fossil Plants.

By LESTER F. WARD, with the Collaboration of Walter P. Jenney, William M. Fontaine, and F. H. Knowlton. Extract from the Nineteenth Annual Report of the U. S. Geol. Survey, Part II. Washington, D. C., 1899.

The results recorded in this extract are the outgrowth of a series of investigations beginning with the discovery of cycads in the Black Hills in 1893. From a study of these fossils and of their stratigraphical position, Professor Ward reached the conclusion that a part of the